

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS

Claims 1-13 (cancelled)

14. (currently amended) A method for determining an organism, the method comprising assaying a plurality of enzymes with a ~~plurality of~~ sensor[[s]] to determine a suite of enzymes expressed by the organism, and thus determining said organism; ~~each of said plurality of the~~ sensor[[s]] comprising: a substrate; ~~at least one~~ more than one pair of electrodes; a sol gel matrix comprising: ~~at least~~ more than one sol-gel enzyme; at least one reactant; and at least one inherently conductive polymer transducer material, wherein each of the more than one sol-gel enzymes is associated with at least one of the more than one pair of electrodes; wherein (a) an organism expresses [[an]] at least one organism-enzyme on the surface of the sensor; (b) the at least one organism-enzyme causes a reaction with the at least one reactant of the sensor; (c) the product according to process step (b) reacts further ~~as catalyzed by~~ with said more than one sol-gel enzyme of the sensor; (d) the products of process step (c) modulate at least one property of the transducer material; (e) and the modulated property is measured.

15. (cancelled)

16. (currently amended) The method of claim 14, wherein said products of process

step (c) include one or more from the group ~~is selected from the group consisting of~~ lactic acid, carbon dioxide, hydrogen, ethanol, acetic acid, succinic acid, gluconic acid, and formic acid.

17. (currently amended) The method according to claim 14, wherein (a) ~~the~~ one of the ~~at least one~~ organism-enzyme is α -amylase; (b) α -amylase catalyzes the hydrolysis of starch to form glucose; (c) one of the more than one sol-gel enzymes is glucose oxidase ~~for catalyzing~~ glucose oxidation ~~is catalyzed by the at least one sol-gel enzyme, glucose oxidase~~ to form gluconic acid and H_2O_2 ; (d) gluconic acid and H_2O_2 modulate the electrical resistance of ~~[[an]]~~ the inherently conductive polymer, ~~or~~ transducer material; (e) and the modulated electrical resistance of the inherently conductive polymer, ~~or~~ transducer material is measured with a voltage source and ohmmeter.

18. (cancelled)

19. (previously presented) The method of claim 14, wherein the substrate is selected from the group consisting of glass, ceramic, and plastic.

20. (currently amended) The method of claim 18, wherein said electrodes comprise one or more elements selected from the group consisting of ~~polyaniline, polythiophenes, polyacetylenes, polypyrroles~~ gold, platinum, silver, copper, and combinations thereof.

21. (previously presented) The method of claim 18, wherein said electrodes are interdigitated.

22. (previously presented) The method of claim 14, wherein said sol gel matrix covers the substrate and the electrodes.

23. (previously presented) The method of claim 14, wherein said sol gel matrix is an encapsulating sol gel, said encapsulating sol gel matrix comprising at least one organosilane, which can be tetrafunctional, like tetramethoxy orthosilicate, trifunctional, like methyltrimethoxysilane, octadecyltrichlorosilane, octadecyltriethoxysilane, phenyltrimethoxysilane and 1,4-bis(trimethoxysilylethyl)benzene, or difunctional, like methyldimethoxysilane, dimethyldiethoxysilane, or monofunctional, like octadecyldimethylmethoxysilane, or derivatized silanes, like 2-(3,4-epoxycyclohexyl)-ethyltrimethoxysilane, 3-aminopropyltrimethoxysilane, 4-aminobutyldimethoxysilane, N-(2-aminoethyl)-3-aminopropylmethyldimethoxysilane, 5-(bicycloheptenyl)-triethoxysilane, dicyclohexyldimethoxysilane and 3-glycidylpropyltrimethoxysilane.

24. (currently amended) The method of claim 14, wherein said sol gel matrix encapsulates said ~~at least~~ more than one sol-gel enzyme.

25. (currently amended) The method of claim 14, wherein said ~~at least~~ more than one sol-gel enzymes ~~[[is]]~~ are selected from the group consisting of tryptophanase, gelatinase, β -lactamase, catalase, casease, citrase, decarboxylase, deoxyribonuclease, lipase, nitrate reductase, β -galactosidase, cytochrome oxidase, phenylalanine deaminase, 1-pyrrolidonyl arylamidase, cystein desulfase, urease, L-asparaginase, glutamate dehydrogenase, organophosphorus hydrolase, acetylcholinesterase, α -amylase and glucose oxidase.

26. (previously presented) The method of claim 14, wherein said transducer material and said reactant are dispersed in said sol gel matrix.
27. (previously presented) The method of claim 14, wherein said reactant is starch containing amylose.
28. (cancelled)
29. (currently amended) The method of claim ~~[[28]]~~ 14, wherein said inherently conductive polymer transducer material is a water soluble polymer.
30. (previously presented) The method of claim 29, wherein said water-soluble polymer is selected from the group consisting of polyaniline, polythiophenes, polyacetylenes, polypyrroles, and combinations thereof.
31. (currently amended) The method of claim ~~[[18]]~~ 14, wherein said electrodes comprise one or more inherently conductive ~~polymers~~ metals and combinations thereof.
32. (previously presented) The method of claim 14, wherein said sol gel matrix is an encapsulating sol gel matrix, said encapsulating sol gel matrix comprises at least one organosilane.